

REMARKS

Applicant's attorney wishes to thank Examiner Stulii for the courtesies extended during the telephone interview of June 5, 2008. During that interview, Examiner Stulii said that an amendment to correct typographical errors would be entered. In this case, the present REMARKS correct a typographical error that appeared on page 10, last paragraph, where "20-20%" should have been "10-20%."

Claims 1, 2 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kahrts, U.S. 2003/0228369 in view of Pilz et al., U.S. 4,263,253.

This rejection is respectfully traversed. Claim 1 has been amended to recite that the method produces a concentrated hop extract containing 10 to 40% by weight xanthohumol. Support for this amendment can be found in the specification as filed at example 4, page 7, line 27. This is far in excess of any concentration of xanthohumol disclosed by Kahrts, as Kahrts only discloses that xanthohumol is one of a variety of alpha acids extracted by the method, and never discloses a particular percentage of xanthohumol obtained. It is well known that only low concentrations of xanthohumol can be obtained, generally about 2 percent.

The present specification as filed notes, beginning at page 1, line 18, that hop tannins comprise numerous polyphenols such as flavanols, proanthocyanides, flavanoids of the kaempferol and quercetin, benzoic acids and cinnamic acid. At page 2, lines 18-20, it is stated that dried hop contains a quantity of 0.2 to 1.0 percent by weight of xanthohumol.

The Examiner has conceded that Kuhrts does not teach specific values of extraction parameters such as pressure and temperature, as stated in the Office Action mailed February 22, 2007. The accompanying declaration of Dr. Manfred Gehrig, one of the inventors of the present application, demonstrates that it is unexpected that the particular extraction parameters used in the herein claimed method would produce such a large amount of xanthohumol.

It should be noted that the amendment filed June 19, 2007, at page 8, paragraph 2, noted that the information in Kuhrts regarding the high concentration of alpha-acids and that one of the primary alpha-acids would be xanthohumol is not correct. Only humulon is an alpha acid, wherein xanthohumol is a polyphenol. Therefore, Kuhrts does not disclose the same type of process as claimed herein.

Pilz adds nothing to Kuhrts, as Pilz neither discloses nor suggests using the particular extraction conditions claimed herein to obtain xanthohumol. Rather, Pilz

is concerned with sterilizing solids by dissolving a solid in a gas under supercritical conditions and transporting the solution through a sterile filter. This has absolutely nothing at all to do with obtaining xanthohumol from hops, and teaches nothing with respect to the particular temperature and pressure conditions claimed herein.

It is well settled patent law that "[A] reference is reasonably pertinent if, even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem. Thus, the purposes of both the invention and the prior art are important in determining whether the reference is reasonably pertinent to the problem the invention attempts to solve... If [a reference] is directed to a different purpose, the inventor would accordingly have had less motivation or occasion to consider it." *In re Clay*, 966 F.2d 656, 23 USPQ2d 1058, 1061, (Fed. Cir. 1992). The presently claimed method deals with extracting high concentrations of xanthohumol from hops extract. Pilz is concerned with freeing solids, particularly pharmaceutical active ingredients, from germs by sterile filtration using supercritical gas. In Pilz, supercritical gas is added to a vessel in which the product to be freed from germs is placed,

and the gas is charged with the product. The fluid mixture is then sent through a sterile filter that retains bacteria and germs. The sterile substance mixture is separated into two phases: the sterile solid phase, which is the solid end product, and a less condensed gas phase. It is clear that Pilz has nothing to do with extraction of active ingredients from a mixture thereof, but merely is concerned with producing a fluid phase that can be subjected to filtration to remove bacteria and germs.

A person having ordinary skill in the art would not reasonably have expected to solve the problem of extracting xanthohumol from hop extracts by considering a reference dealing with subjecting a solid product to filtration to sterilize the product. Since Pilz is clearly non-analogous art, and the problem sought to be solved has nothing to do with extracting xanthohumol from hop extract, it is respectfully submitted that the rejection over Kahrts in view of Pilz cannot be sustained.

Claims 3-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kahrts in view of Pilz, Erdelmeir et al., U.S. 2005/0042318 and Babisch et al., U.S. 2003/0113393.

This rejection is respectfully traversed. As noted above, one skilled in the art would not reasonably combine Pilz with Kahrts. Even though Erdelmeir discloses that it was

well known in the art to carry out several extractions of hop material using supercritical carbon dioxide to increase the content of prenylated chalcones (xanthohumol), and Babisch teaches that it was well known in the art to remove supercritical carbon dioxide from the extract to release pressure to volatilize carbon dioxide, these references alone or in combination neither teach nor suggest an extraction method at pressures claimed herein to obtain a concentration of xanthohumol of 10-20%.

Claims 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuhrt's in view of Pilz, Ohnogi et al., U.S. 2004/0002423.

This rejection is respectfully traversed. While Ohnogi discloses adding ethanol based hop extracts to food and beverages, there is no suggestion in any of the cited references, either alone or in combination, that the hop extract has a concentration of 10-20% by weight. Ohnogi discloses at paragraph 0151 that the concentration of xanthohumol is used in food or beverages in concentration of preferably 0.0003% by weight or more. Ohnogi discloses at paragraph 0212 that a dry product of *Humulus lupulus* is extracted with ethanol for two hours and an extract is obtained. There is no indication of the xanthohumol concentration of this extract.

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Amd. dated June 12, 2008
Reply to Office Action of September 13, 2008
And Advisory Action of March 13, 2008

In view of the above, it is respectfully submitted
that the claims are now in condition for allowance, and
favorable action thereon is earnestly solicited.

Respectfully submitted,

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